

## **LISTING OF THE CLAIMS**

1 (Previously Presented): An electrical stimulator for the treatment of intractable pain syndromes, comprising:

an interferential current generator comprising a sine wave generator which generates an interferential alternating current output comprising first and second sinusoidal signals having different first and second frequencies with a base medium frequency of at least 500Hz but no more than 20KHz; and

at least two pairs of implantable electrodes wherein each electrode has a first and a second end, wherein the first ends are connected to said interferential current generator and the second ends are configured to be implanted to a dura matter in an epidural space at predetermined locations proximate to a subject's spinal cord, wherein each pair of said at least two pairs of implantable electrodes transmits one of said first and second sinusoidal signals such that the first and second frequencies interfere with each other to produce at least one beat frequency signal proximate to the subject's spinal cord, and wherein a majority of the at least one beat frequency signal is directionally distributed and controlled, enabling the at least one beat frequency signal to avoid remaining in and shunting through cerebrospinal fluid proximate to the subject's spinal cord, thereby recruiting dorsal column fibers.

2 (Previously Presented): The stimulator of claim 1, wherein said interferential current generator comprises:

a pulse generator that generates digital signal pulses; and

a digital signal processor connected to said pulse generator that processes the digital signal pulses to approximate a sine-wave-like output waveform.

3 (Previously Presented): The stimulator of claim 1, wherein said interferential current generator comprises:

a pulse generator that generates digital signal pulses; and

a field-programmable gate array connected to said pulse generator that processes the digital signal pulses to approximate a sine-wave-like output waveform.

4 (Original): The stimulator of claim 1, wherein said interferential current includes a resultant beat frequency of no more than 250 Hz.

5 (Original): The stimulator of claim 1, wherein said interferential current includes a voltage output of 11 volts maximum for each circuit.

6 (Cancelled).

7 (Original): The stimulator of claim 1, wherein said interferential current includes a pulse width with a range of at least 10 microseconds but no more than 600 microseconds.

8 (Previously presented): The stimulator of claim 1, wherein the at least two pairs of implantable electrodes comprise two quadripolar leads used to produce two interferential currents.

9-14 (Canceled).

15 (Previously Presented): An electrical stimulator for the treatment of intractable pain syndromes, comprising:

an interferential current generator that generates an interferential alternating current output including first and second sinusoidal signals having different first and second frequencies, with a base medium frequency of at least 500Hz but no more than 20KHz; and

at least two pairs of implantable electrodes having first and second ends, wherein the first ends are connected to said interferential current generator and the second ends are configured to be implanted to a dura matter in an epidural space at predetermined locations proximate to a subject's dorsal column, and

wherein each of said at least two pairs of implantable electrodes carries one of said first and second sinusoidal signals such that the first and second frequencies interfere with each other to produce at least one beat frequency signal proximate to the subject's dorsal column, and wherein a majority of the at least one beat frequency signal is directionally distributed and controlled, enabling the at least one beat frequency signal to avoid remaining in and shunting through cerebrospinal fluid proximate to the subject's dorsal column, thereby recruiting dorsal column fibers.

16 (Original): The stimulator of claim 15, wherein said interferential current generator comprises:

a pulse generator that generates digital signal pulses; and

a digital signal processor connected to said pulse generator that processes the digital signal pulses to approximate a sine-wave-like output waveform.

17 (Original): The stimulator of claim 15, wherein said interferential current generator comprises:

a pulse generator that generates digital signal pulses; and

a field-programmable gate array connected to said pulse generator that processes the digital signal pulses to approximate a sine-wave-like output waveform.

18 (Original): The stimulator of claim 15, wherein said interferential current includes a resultant beat frequency of no more than 250 Hz.

19 (Original): The stimulator of claim 15, wherein said interferential current includes a voltage output of 11 volts maximum for each circuit.

20 (Cancelled).

21 (Original): The stimulator of claim 15, wherein said interferential current includes a pulse width with a range of at least 10 microseconds but no more than 600 microseconds.

22 (Previously presented): The stimulator of claim 15, wherein the at least two pairs of implantable electrodes comprise two quadripolar leads used to produce two interferential currents.

23-42 (Canceled).